

United States Patent [19]
Johnson

[11] **Patent Number:** 4,575,373
[45] **Date of Patent:** Mar. 11, 1986

[54] **LASER ADJUSTABLE INTRAOCULAR LENS
AND METHOD OF ALTERING LENS
POWER**

[76] **Inventor:** Don R. Johnson, 9131 Piscataway
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[21] **Appl. No.:** 667,648

[22] **Filed:** Nov. 2, 1984

[51] **Int. Cl.⁴** A61F 2/16

[52] **U.S. Cl.** 623/6

[58] **Field of Search** 3/13; 128/303.1;
351/160 R, 176

[56] **References Cited**

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Primary Examiner—Richard J. Apley

Assistant Examiner—James Prizant

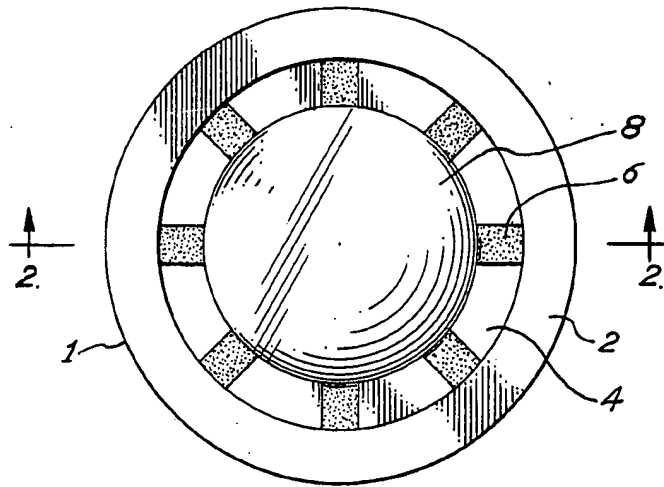
Attorney, Agent, or Firm—Allegretti, Newitt, Witcoff &
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[57]

ABSTRACT

A laser beam is utilized to alter, in situ, the power of an implanted intraocular lens. The overall intraocular lens can be of conventional size and shape. The circumference, or outer ring of the lens is manufactured from a non-toxic heat shrinkable plastic. The plastic is preferably colored to permit selective absorption of laser energy thereby causing the shape, and thus the corrective power, of the lens to change. The invention is particularly useful for correcting postoperative astigmatism.

12 Claims, 4 Drawing Figures



[54] ALTERABLE REFRACTIVE POWER
INTRAOCULAR LENSES

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[21] Appl. No.: 878,368

[22] Filed: Jun. 25, 1986

[51] Int. Cl.⁴ A61F 2/16

[52] U.S. Cl. 623/6

[58] Field of Search 623/6

[56] References Cited

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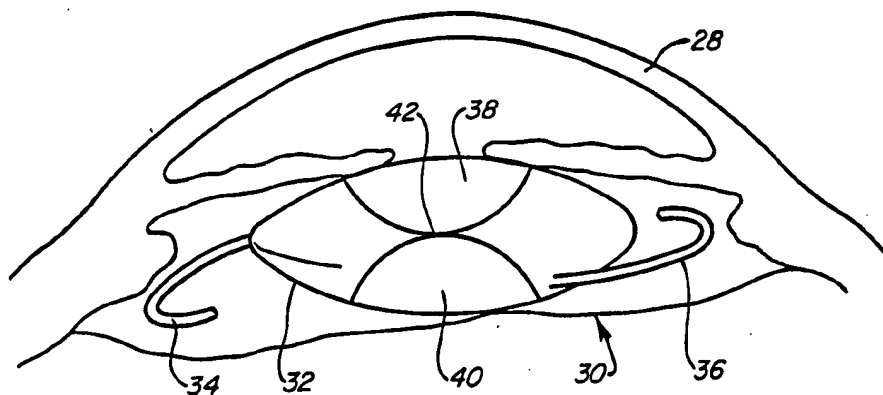
Primary Examiner—Ronald L. Frinks

Attorney, Agent, or Firm—Thomas A. Kmietek

[57] ABSTRACT

Disclosed are intraocular lenses where the refractive power is fixed at implantation while offering the benefit of changing the refractive power ~~subsequently with~~ little or no surgical invasion and in a nearly atraumatic manner. The intraocular lenses are comprised of a central lenticular portion having a chamber therein and having at least one refractive, rupturable membrane which can be ruptured subsequent to implantation thus changing the refractive power of the lenses. The intraocular lenses can be implanted in either the posterior chamber or capsular bag.

14 Claims, 7 Drawing Figures



CITE



US005571177A

United States Patent [19]
Deacon et al.

[11] **Patent Number:** **5,571,177**
[45] **Date of Patent:** **Nov. 5, 1996**

[54] **IOL STRUCTURED FOR POST-OPERATIVE
RE-POSITIONING AND METHOD FOR
POST-OPERATIVE IOL RE-POSITIONING**

[75] **Inventors:** **Jim Deacon**, Capistrano Beach; **Glenn R. Sussman**, Lake Forest; **Joseph I. Weinschenk, III**, Laguna Niguel, all of Calif.

[73] **Assignee:** **Allergan**, Irvine, Calif.

[21] **Appl. No.:** **77,810**

[22] **Filed:** **Jun. 14, 1993**

[51] **Int. Cl.⁶** **A61F 2/16**

[52] **U.S. Cl.** **623/6**

[58] **Field of Search** **623/6**

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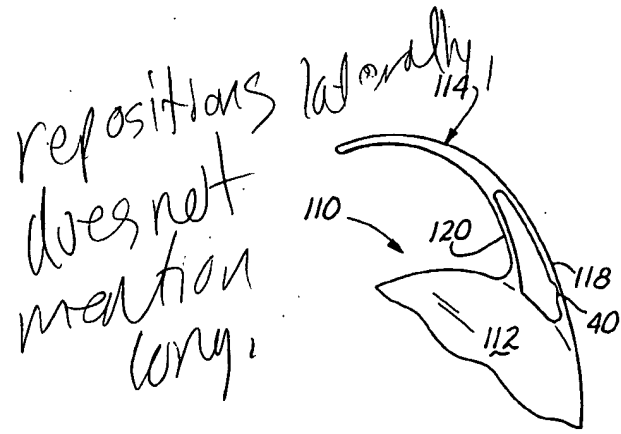
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Primary Examiner—Mary Beth Jones
Attorney, Agent, or Firm—Frank J. Uxa

[57] **ABSTRACT**

A new intraocular lens (IOL) is disclosed. In one embodiment, this IOL comprises an optic and, secured to the optic, a fixation member including at least one alterable portion structured to be altered after the intraocular lens is placed in an eye to at least assist in controllably repositioning the optic in the eye.

13 Claims, 2 Drawing Sheets



repositions laterally
does not mention
long

does not mention
cap bag
accommodation
or changing
power

Cite



US006413277B1

(12) **United States Patent**
Neuhann

(10) Patent No.: **US 6,413,277 B1**
(45) Date of Patent: **Jul. 2, 2002**

(54) **METHOD FOR INTRAOCULAR LENS
INSERTION AND APPARATUS**

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/574,151**

(22) Filed: **May 18, 2000**

(51) Int. Cl.⁷ **A61F 2/16**

(52) U.S. Cl. **623/6.39; 623/6.11; 623/6.38;**
623/6.41; 623/6.43

(58) Field of Search **623/5.12, 6.11,**
623/6.14, 6.38, 6.39, 6.4, 6.41, 6.42, 6.43,
6.44, 6.45, 6.51

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Primary Examiner—Paul B. Prebilic
Assistant Examiner—Will H Matthews

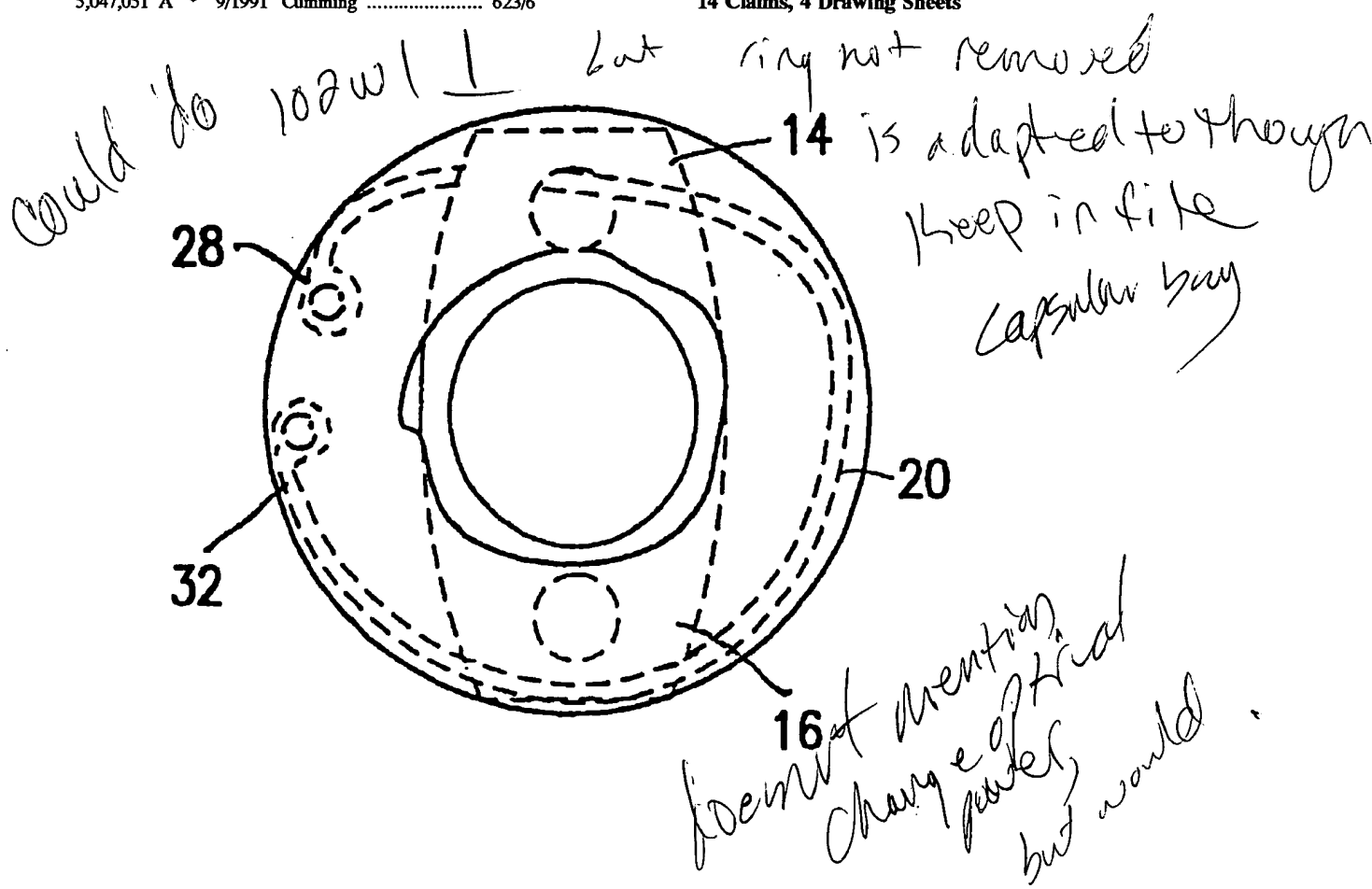
(74) Attorney, Agent, or Firm—Sam Silverberg

(57) **ABSTRACT**

An improved method of inserting an intraocular lens into an eye comprising removing an existing lens so as to leave a capsular bag intact; at least partially inserting an intraocular lens having at least one haptic incorporating an aperture therein into the capsular bag; and inserting a capsular tension ring into the capsular bag such that the capsular tension ring passes through the aperture is disclosed. A replacement lens arrangement and a sterile packaging therefore are also disclosed.

14 Claims, 4 Drawing Sheets

Could use



Cite



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(19) **United States**

(12) **Patent Application Publication**
Sarver

(10) Pub. No.: **US 2002/0133228 A1**

(43) Pub. Date: **Sep. 19, 2002**

(54) **ADJUSTABLE INTRAOCULAR LENS**

Related U.S. Application Data

(76) Inventor: **Edwin J. Sarver, Merritt Island, FL (US)**

(60) Provisional application No. 60/275,220, filed on Mar. 13, 2001, now abandoned.

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Publication Classification

(51) Int. Cl.⁷ **A61F 2/16**

(52) U.S. Cl. **623/6.22**

(57)

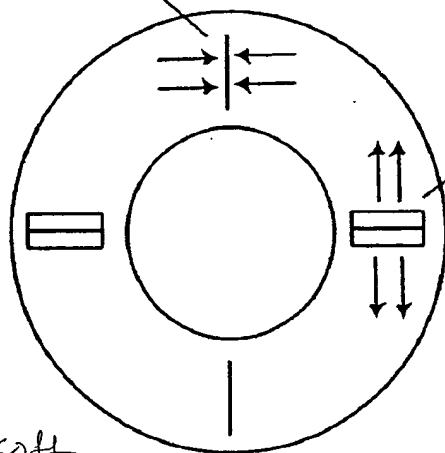
ABSTRACT

Improved adjustable intraocular lenses are disclosed, in which the shape of the surface(s) of the lens can be modified post-operatively using manual methods or controlled pulses of laser radiation to achieve improved optical correction.

(21) Appl. No.: **10/099,204**

(22) Filed: **Mar. 13, 2002**

**Closed fissure
neighborhood
of high optical
power**



**Opened fissure
neighborhood
of low optical power**

*naphtc soft
lens fluid*

25

w/ 1, 33, 34

1/22/03

Opened



Closed



doesn't say naphc soft

*no cont say bag
but inherently will
accommodate*

Cite



US 20030060878A1

107 w/ 1, 7, 9, 10, 12, 18, 22, 33, 34

(19) **United States**

(12) **Patent Application Publication**
Shadduck

(10) Pub. No.: **US 2003/0060878 A1**

(43) Pub. Date: **Mar. 27, 2003**

(54) **INTRAOCULAR LENS SYSTEM AND METHOD FOR POWER ADJUSTMENT**

Publication Classification

(51) Int. Cl.⁷ **A61F 2/16**

(52) U.S. Cl. **623/6.13; 623/6.56**

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(21) Appl. No.: **10/231,433**

(22) Filed: **Aug. 29, 2002**

Related U.S. Application Data

(60) Provisional application No. 60/316,203, filed on Aug. 31, 2001.

ABSTRACT

An intraocular lens (IOL) that provides means for optical power adjustable following its implantation, for example for use in treating cataract patients. The lens body has first and second surface portion that bound at least one interior chamber or space that extends from the central optic portion to the lens periphery. The interior chamber or space has a microporous body that is intermediate inner and outer portions of the space. In one embodiment, the microporous body is capable of cooperating with an external RF or light source to expose a charge to a charge-carrying fluid within the interior chamber. By this means, fluid flows are induced to alter the optical parameters of the lens.

structure

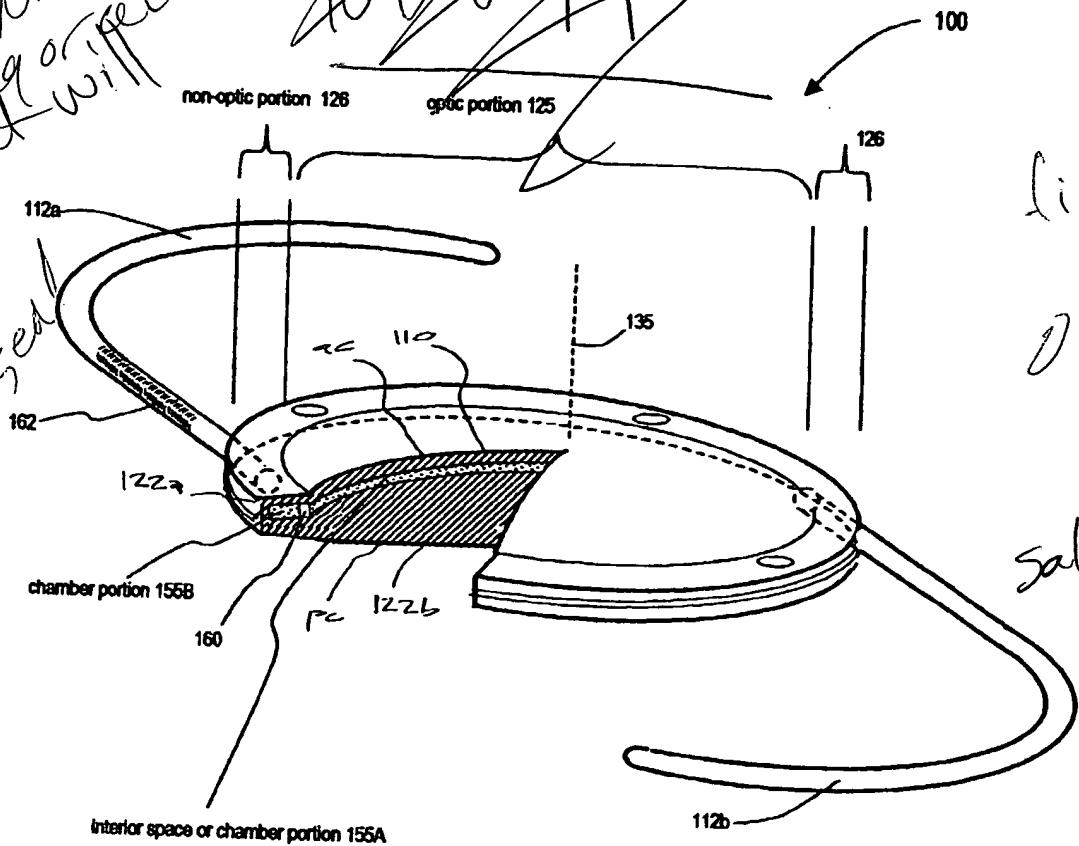
2, 3,

5-laser

10 laser

fig 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

doesn't see cell bag or fiber window but will



saline solution in channel

migrates to center & back

*stressed - fig 2
non stressed - fig 3
fluid removes from periphery into center increasing power*

laser can move it - fig 5